

Page 26, line 20, change "imbedded" to --embedded--.

Page 26, line 24, change "vise" to --vice--.

Page 27, line 2, change "column" to --structure--.

Page 27, line 15, change "magnetic" to --non-magnetic--.

Page 28, line 9, change "6" to --8--.

Page 29, line 10, change "embodiment" to --embodiments--.

Page 29, line 11, change "is" to --are--.

In the Claims

Amend the following claims:

1 1. (Amended) A head for use in a magnetic recording system including a
2 magnetic media with perpendicular magnetic polarity transitions written thereon and
3 circuitry adapted to receive a readback pulse with a substantially Lorentzian pulse shape
4 from said head, said head for transferring data between the magnetic media and an
5 exterior environment, said head comprising:
6 a write element for inducing said perpendicular magnetic polarity transitions into
7 a surface of said magnetic media during a write operation; [and]
8 a yoke disposed within said write element, said yoke having a read gap for
9 sensing said perpendicular magnetic polarity transitions; and
10 a magnetoresistive read element mounted in a flux flow path of said yoke,
11 wherein said magnetoresistive read element produces a readback pulse having a
12 substantially Lorentzian pulse shape in response to one of said perpendicular magnetic
13 polarity transitions.

The magnetic recording system

1 2. (Amended) ~~The head~~, as claimed in Claim 1, wherein said flux flow path
2 includes a read flux flow path integral with a write flux flow path [further comprising:
3 a magnetoresistive element mounted in a flux flow path of said yoke].

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The magnetic recording system

1 3. (Amended) ~~The head~~, as claimed in Claim 1 [2], wherein said read gap of said
2 yoke is disposed at a first distance from said magnetic media and said magnetoresistive
3 read element is disposed at a second distance from said magnetic media, said first
4 distance being smaller than said second distance.

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The magnetic recording system

1 4. (Amended) ~~The head~~, as claimed in Claim 1 [2], wherein said
2 [magnetoresistive element produces a readback pulse having a] substantially Lorentzian[-
3 type] pulse shape includes a peak near zero head position with respect to said one of said
4 perpendicular magnetic polarity transitions.

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The magnetic recording system

1 8. (Amended) ~~The head~~, as claimed in Claim 1, wherein
2 said write element comprises first and second write poles, wherein said first and
3 second write poles have first and second cross-sectional areas [widths], respectively,
4 said second [first] cross-sectional area [width] being larger than said first [second]
5 cross-sectional area [width].

The magnetic recording system

1 9. (Amended) ~~The head~~, as claimed in Claim 8, wherein said second [first] cross-
2 sectional area [width] is about 10 to 100 times larger than said first [second] cross-
3 sectional area [width].

The magnetic recording system

1 10. (Amended) ~~The head~~, as claimed in Claim 1, wherein said yoke includes
2 [further comprising:
3 first, second and third pole pieces wherein said] first, second and third pole pieces
4 [are] in a common plane with said read gap, said common plane being defined by
5 masking during fabrication.

1 17. (Amended) A magnetic storage device comprising:
2 a magnetic media having magnetic polarity transitions perpendicularly recorded
3 thereon; [and]
4 a read element for reading said perpendicular magnetic polarity transitions, said
5 read element including:
6 a flux guide [flux-guide] having a read gap, said read gap used for sensing
7 said perpendicular magnetic polarity transitions and for producing a magnetic flux in said
8 [flux-guide] flux guide in response to each of said perpendicular magnetic polarity
9 transitions, and
10 a magnetoresistive element mounted in said flux guide for producing a
11 readback pulse having a substantially Lorentzian pulse shape in response to said magnetic
12 flux; and
13 circuitry adapted to receive a readback pulse having a substantially Lorentzian
14 pulse shape from said magnetoresistive element.

1 18. (Amended) The magnetic storage device, as claimed in Claim 17, wherein
2 said substantially Lorentzian pulse shape includes a peak near zero head position with
3 respect to and in response to one of said perpendicular magnetic polarity transitions [read
4 element further includes:
5 a magnetoresistive element mounted in said flux-guide for sensing said magnetic
6 flux within said flux guide].

1 20. (Amended) The magnetic storage device, as claimed in Claim 17, wherein
2 said circuitry includes [further comprising:]
3 means for filtering said [a] readback signal so that said readback signal has a
4 greater resemblance to an ideal Lorentzian pulse shape [produced by said read element,
5 wherein said means for filtering produces a signal having a substantially Lorentzian
6 pulse-shape].

1 21. (Amended) The magnetic storage device, as claimed in Claim 17, further
2 comprising:

3 a write element for writing said perpendicular magnetic polarity transitions on
4 said magnetic media, said write element including:

5 first and second write poles having [a] first and second ends, respectively,
6 said first and second ends located proximate to a surface of said magnetic media;

7 a coil element operatively coupled to said first and second write poles for
8 writing to said magnetic media.

1 22. (Amended) The magnetic storage device, as claimed in Claim 21, wherein
2 said first and second write poles comprise first and second cross-sectional areas [widths],
3 respectively,

4 said second [first] cross-sectional area [width] being larger than said first [second]
5 cross-sectional area [width].

1 23. (Amended) The magnetic storage device, as claimed in Claim 22, wherein
2 said second [first] cross-sectional area [width] is about 10 to 100 times larger than said
3 first [second] cross-sectional area [width].

1 27. (Amended) The magnetic storage device, as claimed in Claim 17, wherein
2 said magnetic media is a rotating disk [read element produces a readback pulse having a
3 substantially Lorentzian pulse shape].

1 29. (Amended) The magnetic storage device, as claimed in Claim 17, wherein
2 said read element floats above [is in virtual contact with] said magnetic media on a
3 cushion of air during a read operation.

Add the following claims:

1 30. A magnetic storage device comprising:
2 a magnetic storage media;
3 a head including a write element for inducing perpendicular magnetic polarity
4 transitions in said magnetic storage media during a write operation, a yoke, and a
5 magnetoresistive read element mounted in a flux flow path of said yoke and recessed from
6 said magnetic storage media for producing readback pulses with substantially Lorentzian
7 pulse shapes in response to and in one-to-one correspondence with said perpendicular
8 magnetic polarity transitions during a read operation; and
9 circuitry adapted for receiving readback pulses with substantially Lorentzian pulse
10 shapes from said magnetoresistive read element.

1 31. The magnetic storage device, as claimed in Claim 30, wherein said
2 magnetoresistive read element is sufficiently recessed from said magnetic storage media
3 to prevent thermal asperities in said magnetoresistive read element.

1 32. The magnetic storage device, as claimed in Claim 30, wherein said
2 magnetoresistive read element is sufficiently recessed from said magnetic storage media
3 to prevent electrostatic discharge between said magnetoresistive read element and said
4 magnetic storage media.

1 33. The magnetic storage device, as claimed in Claim 30, wherein said
2 magnetoresistive read element is sufficiently recessed from said magnetic storage media
3 to prevent chemicals on said magnetic storage media from corroding said
4 magnetoresistive read element.

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1 34. The magnetic storage device, as claimed in Claim 30, wherein said
2 circuitry includes a detector designed to detect Lorentzian pulse shapes.

1 35. The magnetic storage device, as claimed in Claim ³⁰34, wherein said
2 detector is a class-4 partial response (PR4) detector.

1 36. The magnetic storage device, as claimed in Claim ³⁰34, wherein said
2 detector is a peak detector.

1 37. The magnetic storage device, as claimed in Claim ³⁰34, wherein said
2 detector receives said readback pulses.

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1 38. The magnetic storage device, as claimed in Claim ³⁰34, wherein said
2 circuitry includes a high pass filter that receives said readback pulses and provides
3 filtered readback pulses, which more closely resemble ideal Lorentzian pulse shapes than
4 said readback pulses, to said detector.

1 39. The magnetic storage device, as claimed in Claim ³⁰34, wherein said
2 magnetic storage device is devoid of a high pass filter between said magnetoresistive read
3 element and said detector.

1 40. The magnetic storage device, as claimed in Claim ³⁰34, wherein said
2 magnetic storage device is devoid of a differentiator between said magnetoresistive read
3 element and said detector.

1 41. The magnetic storage device, as claimed in Claim ³⁰34, wherein said
2 magnetic storage device is devoid of signal processing circuitry between said
3 magnetoresistive read element and said detector.

1 42. The magnetic storage device, as claimed in Claim 30, wherein said
2 magnetic storage media includes a magnetic underlayer and a recording media such that
3 the orientation of a magnetic easy axis is perpendicular to a top surface of said magnetic
4 storage media.

1 43. The magnetic storage device, as claimed in Claim 30, wherein said
2 readback pulses have peaks near zero head positions with respect to said perpendicular
3 magnetic polarity transitions.

1 44. The magnetic storage device, as claimed in Claim 30, wherein said
2 readback pulses are substantially symmetric about zero head positions with respect to said
3 perpendicular magnetic polarity transitions.

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1 45. The magnetic storage device, as claimed in Claim 30, wherein said
2 readback pulses have peaks near and are substantially symmetric about zero head
3 positions with respect to said perpendicular magnetic polarity transitions.

1 46. The magnetic storage device, as claimed in Claim 45, wherein said
2 readback pulses have a single voltage polarity with respect to a baseline voltage between
3 said readback pulses.

1 47. The magnetic storage device, as claimed in Claim 30, wherein said yoke
2 includes a write flux guide that provides a write gap and a read flux guide that provides
3 a read gap, and said read flux guide is integral with and positioned within said write flux
4 guide.

1 48. The magnetic storage device, as claimed in Claim 47, wherein said yoke
2 includes first, second and third pole pieces, said first and third pole pieces are in said
3 write flux guide and provide write poles that define said write gap, and said first and
4 second pole pieces are in said read flux guide and provide read poles that define said read
5 gap.

1 49. The magnetic storage device, as claimed in Claim 48, wherein said first,
2 second and third pole pieces are substantially aligned with one another and define a plane
3 that is substantially parallel to a top surface of said magnetic storage media.

1 50. The magnetic storage device, as claimed in Claim 48, wherein said
2 magnetoresistive read element connects said first and second pole pieces.

1 51. The magnetic storage device, as claimed in Claim 48, wherein said yoke
2 includes a non-magnetic spacer in said write flux guide that prevents magnetic flux from
3 circulating through said write flux guide during a read operation.

1 52. The magnetic storage device, as claimed in Claim 48, wherein said first,
2 second and third pole pieces are part of an air bearing surface that floats above said
3 magnetic storage media on a small cushion of air during read and write operations.

1 53. The magnetic storage device, as claimed in Claim 48, wherein said first,
2 second and third pole pieces contact said magnetic storage media during read and write
3 operations.

1 54. The magnetic storage device, as claimed in Claim 48, wherein said first,
2 second and third pole pieces contact a lubricant on a top surface of said magnetic storage
3 media during read and write operations.

1 55. The magnetic storage device, as claimed in Claim 48, wherein said head
2 includes write coils disposed between said first and third pole pieces but not between said
3 first and second pole pieces.

1 56. The magnetic storage device, as claimed in Claim 48, wherein said head
2 includes write coils disposed between said first and second pole pieces.

1 57. The magnetic storage device, as claimed in Claim 30, wherein said yoke
2 includes a write flux guide that defines a write gap and a read flux guide that defines a
3 read gap and is separate from said write flux guide.

1 58. The magnetic storage device, as claimed in Claim 30, wherein said
2 magnetoresistive read element is positioned within said write element.

1 59. The magnetic storage device, as claimed in Claim 30, wherein said
2 magnetic storage device is a tape drive.

1 60. The magnetic storage device, as claimed in Claim 30, wherein said
2 magnetic storage device is a disk drive.